University of Alberta

EXAMINING THE EFFECT OF A SOCIAL AND EMOTIONAL LEARNING PROGRAM ON PROACTIVE AND REACTIVE AGGRESSION IN CHILDREN

by

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Abstract

This study examined the effect of a social emotional learning program on children engaging in proactive and reactive aggression in the classroom. It included 542 children from 29 classrooms. Teacher, peer and self-reports of proactive and reactive aggression were administered at pretest and posttest in a quasi-experimental design. Three child behaviour profiles were found based on teacher pretest ratings of proactive and reactive aggression: 1) children who were not aggressive; 2) children who were both proactive and reactive aggressive; and 3) children who were reactive aggressive. These three profiles were correlated with peers and self ratings. The differential effect a school-based universal social and emotional learning program on children within these three profiles was examined. The ROE program did not have a significant effect on children engaging in high levels of aggression, compared to those who did not receive the program.

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Introduction

Social and emotional learning is commonly defined as the way in which one learns to apply attitudes and skills important in recognizing and controlling emotions, developing thoughtful concern for others, making conscientious decisions, developing positive social relationships with others, learning to contribute in ethical and responsible ways, and coping with difficult situations proficiently (Elias, 2006; Greenberg et. al., 2003; Zins & Elias, 2006). Over the past several years, social and emotional learning has become a goal in many classrooms and schools across North America (e.g., Elias, 2006; Frey, Hirschstein, & Guzzo, 2000; Frey et. al., 2005). Effective social and emotional learning programs focus on teaching children prosocial behaviour. A common secondary goal of social and emotional learning programs is to decrease aggression within the classroom (Zins & Elias, 2006). Classroom social and emotional learning programs are, at times supported by research evidence, but often are not (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2003).

Many types of aggressive behaviour have become an unfortunate commonality in today's classrooms (Pepler et al., 2006; Smith, Pepler, & Rigby, 2004). Furthermore, in 2002, the National Longitudinal Study on Children and Youth (NLSCY) found that 13.5% of children between the ages of two and five were engaging in physical aggression and 10.1% of children in the same age bracket exhibited low prosocial behaviour. Research has suggested that the early use of aggression predicts later maladaptive behaviours including peer rejection, criminal behaviour, underachievement, and bullying into adulthood (Parker &

Asher, 1987; Pepler et. al., 2006). Thus, as children enter school settings by five years of age, the school environment has come to be considered an influential site for implementing prevention programs. Examining if social and emotional learning programs are effective in reducing aggression in the classroom is important in understanding the influence that the school environment may have on children who engage in aggressive behaviours. Research evidence suggests that one of many positive outcomes to arise from social and emotional learning programs includes decreasing problem behaviours in the school environment (Elias, 2006; Greenberg et al., 2003; Zins, Bloodworth, Weissberg, & Walberg, 2004). In addition, it has been suggested that effective social and emotional learning programs aid in promoting positive emotional, academic, and social behaviours (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Elias, 2006; Greenberg et al, 2003).

Over the recent past, distinctions have been made regarding different types of aggression. Understanding these distinctions is important because the need to alter their trajectory may differ. Proactive aggression is aggression that is being intentionally used to meet a goal. Conversely, reactive aggression is used when an individual reacts negatively to threats when provoked in some manner (Crick & Dodge, 1996; Lochman, Powell, Clanton, & McElroy, 2006).

This research study examined the effect that a commonly implemented 'prevention program' that addresses social and emotional learning, the *Roots of Empathy (ROE),* has on aggressive elementary school-aged children. The ROE is a social and emotional learning program that has been widely adopted in Canada

and other English speaking countries. The program has enormous intuitive appeal as it involves a monthly classroom visit by an infant and his/her parent(s) whom the class "adopts" at the beginning of the school year. During these monthly visits students learn about the baby's growth and development via interactions and observations with the baby. The curriculum is instructed by an outside facilitator (i.e., not the classroom teacher) who works co-operatively with the teacher to foster students' social and emotional understanding and knowledge of human development.

Examining the effectiveness of a commonly implemented social and emotional learning program, the Roots of Empathy (ROE) is helpful in understanding the effect it has on children who engage in aggressive behaviour. Previous evaluations of the ROE program (e.g., Schonert-Reichl, Smith, Zaidman-Zait, & Hertzman, 2002) have indicated that children who received the ROE program decreased in their proactive and reactive aggression as rated by their teachers. This research evaluates the effect that the ROE has on the subgroup of children who are identified by their teacher as engaging in proactive and reactive aggression.

Literature Review

This literature review examines primary research and literature that investigates prosocial behaviour, social and emotional learning programs, and aggressive behaviour. Specifically, proactive and reactive aggression are examined in detail. The developmental trajectory of aggressive behaviour is reviewed. Research that supports effective social and emotional learning programs is examined and details of the ROE program are explained. Finally,

literature investigating aggressive behaviour is framed in Bandura's social learning theory. The theory is used to examine how some children come to engage in aggressive behaviour. This literature review serves as a framework for understanding the effect that the ROE program had on proactively and reactively aggressive children in five Western Canadian Schools.

Prosocial and Aggressive Behaviour

Prosocial behaviour can be defined as behaviour that is meant to benefit another person. It can be motivated by individual reasons, sympathy for others, or one's own moral standards (Eisenberg, 2004; Eisenberg & Miller, 1987; Eisenberg & Fabes, 1998). Examples of prosocial behaviour include helping others, sharing with others, or praising someone's work. Some research has suggested that children who exhibit higher levels of prosocial behaviour tend to have parents who model prosocial behaviour in daily interactions (Eisenberg, 2004). Furthermore, children often learn new ways of exhibiting prosocial behaviours by imitating others in their environments (Bandura, 1997; Eisenberg, 2004). Prosocial behaviour becomes more prevalent with age and becomes apparent as children move into middle childhood. According to Eisenberg and Fabes (1998), humans appear to be biologically prepared to learn prosocial behaviours and to experience empathy. Prosocial behaviour varies based on environmental experiences. For example, child prosocial behaviour tends to increase when children observe adults engaging in prosocial behaviour (Davies, 2004; Eisenberg & Fabes, 1998).

Forms of antisocial behaviour, specifically aggressive behaviour can be explained as behaviour that results in harming others (Crick & Dodge, 1996;

Lochman et al., 2006). Physical-type aggression is fairly common among young infants under the age of two and begins to decrease once children develop language between the ages of two and four (Coie & Dodge, 1998). Within the preschool years, physical aggression is generally used as a means to obtain an item that the child does not have the social skills to acquire in a non-aggressive way. For example, pushing a peer out of the way to acquire a toy that a child wants is developmentally appropriate at the preschool age (Davies, 2004). As language and social development occur, preschool and school age children begin to learn that aggression is not a socially appropriate means to have their needs met and learn to use language in order to acquire what they want (Davies, 2004). Developmentally, physical aggression tends to peak at age three when language ability becomes more complex (Coie & Dodge, 1998). It has been speculated that a developing ability to wait for a desirable outcome contributes to the ability of preschool-aged children to reduce physical aggression to obtain what they want (Coie & Dodge, 1998). Additionally, as children begin to age, they learn self-regulation techniques that tend to decrease their use of aggression with others (Tremblay et al., 2004).

Some aggressive children have fewer friends than their non-aggressive counterparts (Davies, 2004); however, not all aggressive children are rejected by their classmates (Coie & Dodge 1998). Furthermore, when aggressive children have close friends, they tend to mutually engage in aggressive antisocial-type behaviours and thus encourage each other to defy rules or social expectations (Davies, 2004). It has been suggested that children with strongly developed

prosocial behaviours have a better ability to resist the urge to conform to peer groups that encourage them to engage in aggressive behaviour (Eisenberg & Fabes, 1998). Furthermore, children who have consistently observed adults and other models engaging in antisocial or aggressive behaviours become 'disposed' to engage in aggressive behaviours and are much more likely to engage in aggression than their prosocially oriented peers (Bandura, 2001; Davies, 2004).

School-age children who frequently engage in aggressive behaviours do not appear to have social foundations that are necessary for positive social interactions. This lack of developmentally appropriate social skills appears to contribute to their engagement in aggressive-type antisocial behaviour (Roland & Idsoe, 2001). Furthermore, research has suggested that aggressive children tend to be delayed in their development of verbal language and often have increased impulsivity and attention deficit type difficulties (Coie & Dodge, 1998). Research has implied that these children often have parents that engage in coercive parenting practices and frequently discipline in an inconsistent way. Coie and Dodge (1998) have postulated that this inconsistent parenting often results in children who are highly emotionally reactive and thereby become at-risk for engaging in aggressive and disruptive behaviours in the classroom. For typically developing children in elementary school, aggression is developmentally much less common than during infancy and preschool (Coie & Dodge). During typical development in elementary school, children begin to learn the difference between accidentally hurting someone and doing so intentionally (Coie & Dodge). As a

result, this newly gained understanding lends to a significant decrease in aggressive behaviour in elementary school.

It is during the elementary school years that the distinction between proactive and reactive aggression becomes evident with children who are aggressive towards others. As stated previously, proactive aggression is aggression that is being intentionally used to meet a goal. Reactive aggression is used when an individual reacts negatively to threats when provoked in some manner (Crick & Dodge, 1996; Lochman, et a., 2006).

The developmental trajectory of proactive and reactive aggression is not well understood. Crick and Dodge (1996) examined the differences in proactive and reactive aggression with 624 third through sixth grade students. Children were categorized based on teacher ratings of aggression. Children completed measures probing at personal intent attributions meant to examine social information processing and social goals. Results of the study found a clear difference between reactive and proactive types of aggression. Further, the children in the proactively aggressive group reported greater efficacy in their belief in positive outcomes of engaging in aggressive behaviour. Mayberry and Espelage (2007) investigated differences between reactive and proactive aggression, and empathy with 433 middle school students. Upon conducting a cluster analysis, they found that four clusters became apparent. In their entire sample of students the majority (n=213) fell into the *uninvolved* (e.g., neither proactive nor reactive aggressive) group, some fell into the *proactive aggressive* group (n=68), some fell into the *reactive aggressive* group (n=86), and the

remainder fell into the *reactive/proactive aggressive* group (n=34). The researchers found that the *reactive aggressive* cluster displayed less emotional empathy than the *uninvolved* group and when examining cognitive empathy, all three aggression clusters (*reactive aggressive, proactive aggressive, and reactive/proactive aggressive)* showed lower scores than the *uninvolved* group. An interesting finding was that none of the clusters differed on scores related to self-perceptions of their own behaviours. That is, the children in each cluster did not differ in their self-perceptions of their feelings about behaving in an 'acceptable manner' during the day and their ability to avoid getting into trouble. Finally, results indicated that students in the *reactive/proactive aggressive* cluster showed the lowest levels of empathy. Results from this investigation suggest that further research is needed examining students engaging in both reactive and proactive types of aggression. Additionally, both studies suggest that reactive and proactive aggression are similar in some ways (e.g., children have low ability to empathize with others) yet as previously described, the two types of aggression have behavioural differences between them (e.g., proactively aggressive children reporting a belief in positive outcomes related to aggressive behaviour).

Children can learn new aggressive behaviours from observing models in their environments such as parents and siblings at home, peers in the school environment, or a range of models on television (Bandura, 1997; Coie & Dodge, 1998). It has been argued that combined with other variables, low socio-economic status often leads to diminished parental effectiveness which often increases rates of violence and crime (Sampson & Laub, 1994). Over time, aggressive children

often begin to believe that aggressive acts are not only morally acceptable but will often lead to positive outcomes (Bandura, 1997). This concurs with research that suggests that aggression becomes a stable trait over time. A long term study examining aggression was carried out over a 22 year period and followed 193 males from 8 years of age until the age of 30 (Husemann, Eron, Lefkowitz, & Walder, 1984). At age 30, the men's self-ratings of physical aggression as well as their wives ratings of physical aggression correlated significantly with peer ratings at age 8. In the same study the female sample did not have exactly the same results however, adult female self-ratings of punishment towards their children were significantly correlated childhood peer ratings of physical aggression. The same was found for the males (Husemann et al. 1984). Several other studies also suggest that aggression becomes a stable trait over time (e.g., Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988; Coie & Dodge, 1983).

There is additional research evidence to support an increase of physical aggression from the preschool years and beyond for children coming from unstable home environments. Cote, Vaillancourt, LeBlanc, Nagin, & Tremblay (2006) carried out a 6-year longitudinal study examining physical aggression trajectories for 10, 658 Canadian children aged 2 to 11. Family characteristics and interviews with a 'person most knowledgeable' about the child were used to create trajectory estimators for estimations of physical aggression trajectories. Those children who had the highest predictors of physical aggression came from homes with high scores on hostile parenting, dysfunctional family functioning, inconsistent parenting, low family income, and low maternal education. Other

research has found similar findings (e.g., Pepler, Jiang, Craig, & Connolly, 2008; Jousemet et al., 2008).

How children who engage in aggressive behaviours perceive themselves compared to how others perceive them is important to understand in order to address efforts at intervention. Cillesen and Bellmore (1999) compared 644 fourth grade students' ratings of themselves, to ratings of them by their teachers, and to ratings of each other using peer nomination techniques. Broad items measured included school competence and social behaviour. For each construct, self-other agreements were calculated between the self-ratings, teacher ratings, and peer ratings. Overall, the researchers found that students with 'poor peer relationships' (e.g., rejected children with low prosocial skills) had the lowest accuracy in self-other agreements when compared to students who were considered 'popular' or 'average'. Furthermore, 'popular' children were the most likely to accurately nominate children who 'most liked' them and the least likely to accurately nominate peers who 'most disliked' them; conversely, 'rejected ' children were the most accurate at perceiving children who 'most disliked' them and the least accurate at nominating children who 'most liked' them. Overall, results suggest that children's perceptions of themselves match their social experiences with peers; both groups of children who are well-liked and disliked are aware of how most of their peers perceive them.

A Social-Cognitive Perspective

Bandura provides us with an explanatory model of the development of aggressive behaviour. According to Bandura, throughout the course of development, children are socialized to adopt moral standards that guide them in

personal engagement in prosocial and antisocial behaviour (Bandura, 1999a). In early childhood, through socialization and observation of social acts that others engage in, children develop self-regulatory skills that they use to monitor their own conduct and develop perceptions of outcomes that result from moral or amoral actions (Bandura, 1999a;1999b; 2004). During middle childhood, children begin to value their own interests and to question the morality of the actions of others (Thorkildsen, 2004). Upon development of personal moral standards, children begin to desist from engaging in acts that violate their own moral standards and start to act in ways that support their own developing standards of prosocial behaviour (Bandura, 1999a; 2004). Furthermore, it has been suggested that adherence to personal moral standards is strengthened by a sense of empathy and by taking responsibility for one's actions (Bandura et al., 1996; Eisenberg & Miller, 1987). These ideas are supported by Eisenberg, Boehnke, Schuhler, and Silbereisenm (1985), who imply that the incidence of children's prosocial behaviour is positively correlated with the use of developmentally appropriate moral reasoning. Once internal moral standards begin to develop, children begin to identify peers as equal, which often stimulates empathetic reactions by perceiving similarities between each other (Bandura, 1999a).

In their 1985 study comparing 120 German and American preschool and elementary aged children, Eisenberg et al. (1985) found that prosocial moral judgment was similar at different ages across the two distinct cultures. Both cohorts of children were given the same moral reasoning questions. When both German and American children's answers were compared, no age-related

differences were detected. The only significant differences found were related to the type of prosocial actions specific to the two different cultural environments. For example, German children used reasoning related to direct reciprocity whereas American children referred more to their description of 'good' and 'bad' persons. The authors saw this as a cultural difference and the difference did not have an effect on the pre-described levels and categories of moral reasoning. In addition, it is important to note that there were more similarities than differences in ratings of prosocial behaviour and moral development. This finding implies that the maturity of moral reasoning is indeed a developmental mechanism, which is heavily affected by the environment that a child observes and is a part of.

Personal agency can be defined as an individual intentionally making events occur by one's own actions (Bandura, 2001). As per Bandura's (2001) social-cognitive theory, the nature of experiences that individuals engage in are dependent on the environments that people find themselves in and create. Personal agency is influenced, to varying degrees, by environmental factors influenced by individual experiences (Bandura, 2001). Through the development of individual moral standards, and by creating an understanding of prosocial behaviour, children begin to exercise personal agency over their own behaviour and begin to understand internal and external consequences of their actions (Bandura, 1999a). According to Bandura (2004), conduct becomes motivated and sustained through ongoing self-evaluation. Children's prosocial actions thus become regulated by internal mechanisms of moral agency. According to social-cognitive theory (e.g., Bandura, 1999a; 1999b; 2004), when moral agency

becomes a strong regulator of children's prosocial behaviours, individual agency over ones behaviour becomes central to prosocial actions.

Based on the conduct of themselves and others, children develop identities from which moral engagement ensues (Thorkildsen, 2004). In examining children who engage in proactive aggression, determining the mechanisms of personal agency over moral understanding is central to comprehending why one child engages in amoral actions whereas another of similar chronological age does not. Personal agency over moral control operates at the highest level when children acknowledge that their actions can cause harm to others and when a child perceives peers as equal, that is, they experience positive and negative emotions in a similar way (Bandura, 1999a). Bandura (1999a) suggests that when children have not developed positive moral standards, this level of personal agency is lower. In addition, research conducted by Perry, Perry, & Rasmussen (1986) suggests that children who are aggressive tend to become more confident than their non-aggressive peers when contemplating proactive aggression. Furthermore, it has been implied that children who engage in aggressive behaviour have stronger beliefs that aggression towards others can produce positive outcomes for themselves (Crick & Ladd, 1990; Perry et al., 1986).

There is research evidence that suggests early childhood aggression tends to remain a stable train over time. Lacourse et al. (2006) carried out a longitudinal study following 937 kindergarten-aged children for twelve years. When in kindergarten, behavioural profiles were developed for each child based on child report measures, teacher questionnaires, and contextual family information. When

the children were again assessed twelve years later, Lacourse et al. found that the children who showed low levels of prosocial behaviour, high levels of hyperactivity, and increased levels of fearlessness in kindergarten were those that were most likely to have a later affiliation with a peer group that demonstrated aggressive behaviour. When considering proactive and reactive aggression from a developmental perspective, this concerning finding suggests that those who begin engaging in aggressive antisocial behaviour early in life, often continue on the same path as they age. This is further supported by Pepler et al. (2008) who in their longitudinal study of approximately 2000 grade six to twelve students found that signs of aggression in younger elementary school grades predicted forms of aggression in later high school grades.

When individuals have strong moral standards yet still engage in amoral actions, moral disengagement has been speculated by Bandura (1999a; 2004) as the mechanism behind proactively aggressive antisocial behaviour. In this model Bandura proposes that moral self-regulatory mechanisms may not become mentally engaged when an individual disengages from his or her internal agent of morality. Using his social-cognitive theory as a framework, Bandura (1999a; 2004) has suggested several reasons for personal justification of moral disengagement in the developing child. A child with highly developed moral standards who commits an aggressive act may: mentally reconstruct his/her conduct so as not to perceive it in an amoral way; he/she may minimize the operation of personal agency so his/her role in the antisocial act is minimized; or he/she may mentally label the victim with dehumanizing qualities so as to devalue

them as a peer thereby justifying the antisocial behaviour. Furthermore, once a child or group of children begins to perpetually engage in aggressive behaviour towards others, children often shift their attention from their personal code of morality to the details of the antisocial behaviours that they are intending to commit (Bandura, 1999a). In other words, according to Bandura (1999; 2004), once a child has morally disengaged from antisocial behaviour, their focus often shifts from sympathizing with the victim to the details and actions of the aggressive behaviour itself. That is, they become more engrossed in the aggressive behaviour rather than the individual that they are aggressing towards. It has been proposed that moral disengagement can begin to operate in early life (Bandura, et al., 1996). Bandura et al. sampled a group of 900 grade 5-8 students and had peers, teachers, parents, and the students themselves rate various morally related issues on a three point Likert scale for each student in the sample. Findings suggest that students who exhibited high moral disengagement were less prosocically oriented and more likely to be socially rejected by their peers. Furthermore, findings implied that students who were highly morally disengaged demonstrated signs of increased proactive aggression towards others, and experienced decreased sensations of guilt over aggression towards others. The opposite was also true; students who exhibited high prosocial behaviour had increased feelings of guilt and reduced aggressive tendencies. These findings suggest that children who tend to disengage morally are often less troubled by anticipatory feelings of guilt prior to engaging in antisocial conduct, often identified as proactive aggression (Bandura et al., 1996). When examining this

study from a social-cognitive perspective, Bandura (2004) suggests that children who engage in higher moral disengagement display higher levels of aggressive behaviour than those who allow their internal agent of morality to have an effect on actions. In addition, it has been suggested that children who perpetually engage in aggressive behaviour often continue down antisocial paths in life (Lacourse et al., 2006; Pepler et. al. 2008) and generally exhibit lower acts of prosocial behaviour and thus experience low guilt over bullying behaviours (Bandura, 2004;1996).

Bandura (1999a; 1999b) further postulates that although internal mechanisms of moral control have a significant impact on children's proactive aggression and prosocial behaviour, in using social-cognitive theory as a framework for understanding moral or amoral actions, both social awareness and internal mental systems operate in a reciprocal fashion. That is, in the perpetration of prosocial or aggressive actions, moral agency operates within the many social systems that exist in the various environments where a child lives his/her life (Bandura, 1999b). Furthermore, childhood maturation of moral agency is influenced by the social systems that a child observes during development. The enactment of internal moral agency is in turn influenced by the many social systems that exist in the child's many environments (Bandura,1999b; 2004).

As children are all reared in different environments, they come to school with different understandings of morality. Prior to entering school, most children's social environments involve consistent people in the home and community. For most children, it could be assumed that before starting school,

their social world involves somewhat stable rules and expectations be it at home, daycare, or in the community; the people in their lives generally remain relatively consistent. Upon starting school, children engage their own individual agency over prosocial behaviour based on their respective upbringing (Thorkildsen, 2004). Children's responses to the school surroundings are deeply affected by their home environments and the social models and influences that they have had to date (Bandura, 1997; Thorkildsen, 2004).

Upon entering the school system, several new social models come into play and contribute to children's development of morality and affect their development of prosocial and antisocial behaviours (Thorkildsen, 2004; Bandura, 1999b; Caprara, et al., 2000). By grade one, children spend at least six hours a day, five days a week in the school environment. In school, students look not only to their peers for cues about rules, appropriate conduct, and expectations, but also to their teachers and the rules that govern the school environment (Thorkildsen, 2004). New social rules, environmental expectations, and people who can model prosocial or antisocial behaviour enter a child's world. Teachers and school staff may have different expectations than parents, and peers all come from different backgrounds and up to the point of starting school, have experienced unique social modeling in their individual environments. Upon coming to school, a new array of social models becomes available for children. Adults impose new expectations in a new environment and children have new social models to examine and learn from.

Examination of literature and research on the developmental mechanisms supporting proactive and reactive aggression in children induces questions about the effect that the school environment can have on the social development of school-aged children. In looking at Bandura's (1997) social-learning theory, an important question to examine is: can curricula delivered in the school environment have a large enough impact to reduce proactive and reactive aggression in elementary-aged children? Furthermore, can a social-emotional learning program have a positive effect in reducing the aggressive behaviours of children who are already engaging in proactive and reactive aggression at the start of the school year?

Social and Emotional Learning

Social and emotional learning involves a process whereby individuals expand their basic social and emotional abilities, develop concern and mindfulness about others, create positive relationships, learn to decision-make responsibly, and learn how to effectively manage difficult situations (Elias, 2006; Greenberg et al., 2003; Zins et al., 2004). Social and emotional learning is supported by research evidence that suggests not only can these skills be taught, but they can promote positive child development, decrease challenging behaviours, and improve academic performance (Elias, 2006; Greenberg, et al., 2003). Furthermore, research has suggested that children with strong social and emotional skills often experience an increased motivation to learn which leads to positive academic outcomes on school attendance, assignments, and testing procedures (CASEL, 2003; Zins et al., 2004).

A review of research on aggressive behaviour in childhood conducted by Dodge (2003) suggests that there is limited and contradictory evidence that exists on programs targeting children engaging in aggressive behaviour. Furthermore, Dodge (2003) suggests that programs that target the many environments that children spend time in (e.g., home, with peers, communities, and school) are implied in the research literature to be the most effective compared to those that focus on only one environment (e.g., school). Dodge (2003) also concludes that the largest predictor of aggressive behaviour in young school-aged children is family environment; that is, children engaging in aggression typically come from homes that are found to be high in stress, abuse, and poverty. This is further supported by Cote et. al. (2006) who found that young preschool aged Canadian children coming from homes experiencing adversity such as poor parenting practices, low income families, single-parent households, and young mothers were more likely to embark on a trajectory of aggressive behaviour into the adolescent years. This ties to Bandura's social learning theory, which implies through socialization, children develop self-regulatory skills that guide their moral or amoral actions (Bandura, 1999a;1999b; 2004). As children enter their school-age years, a large portion of their time is spent at school. This new environment could potentially have a positive effect in altering student aggressive behaviour as learned and developed in the home and community environments. Based on research evidence (e.g., CASEL, 2003; Zins & Elias, 2006), effective social and emotional learning programs can have a positive effect in decreasing aggressive

behaviour. In considering the effect a social and emotional program can have, one could hypothesize that an effective program should affect students, not only during the social and emotional curriculum time, but also during regular class time, time with peers outside of the classroom, and possibly in various community environments where peers are spending time together. Evidence supporting social and emotional learning programs contributes to the hypothesis that the ROE program will decrease levels of proactive and reactive aggression across the school year.

The Roots of Empathy Program (ROE)

The Roots of Empathy (ROE) program is a universal classroom-based social and emotional learning program for children in Kindergarten – Year 7. The program, created by Mary Gordon, was initially piloted in two classrooms in Toronto in 1996. Since that time the program has grown to serve thousands of children in several countries. The overriding goal of the ROE program is to foster children's social and emotional understanding and knowledge of human development.

The 10-month program has as its cornerstone a monthly classroom visit by an infant and his/her parent(s) whom the class "adopts" at the beginning of the school year. It is during these monthly visits that children learn about the baby's growth and development via interactions and observations with the baby. Each month the ROE program instructor visits his/her participating classrooms three times, once for a pre-family visit, another time for the visit with the parent and infant, and finally, a post-family visit. The lessons for the tri-monthly visits from

the instructor foster prosocial abilities through discussion and activities in which the parent-infant visit serves as a springboard for discussions about understanding feelings, infant development and effective parenting practices. The overriding objective of this program is to teach students about human development and promote the development of emotional understanding and social cognition, both processes found to play a potent role in future positive social and behavioural adjustment.

Each lesson plan is designed to capitalize on the shared observations of the family visit and is scripted to match the age of the baby and the age of the children with lesson plans and accompanying activities calibrated to children's level of development. In addition to the three classroom visits per month by the instructor, each classroom teacher is encouraged to use the lessons and ideas presented during the specific ROE lesson and extend them throughout his/her own curricular lesson plans.

The primary goals of ROE are to:

- To foster children's emotional competence – particularly their empathy, emotion understanding, and understanding of human relationships,
- To promote the development of more prosocial and less aggressive behaviors, and
- To increase children's knowledge of infant development and effective parenting practices.

In keeping with other comprehensive social and emotional learning programs, embedded within the ROE program are explicit components aimed at changing

the ecology of the classroom environment to one in which belonging, caring, collaboration, and understanding others is emphasized (Cohen, 2001; Goodenow, 1993; Noddings, 1992). Throughout the program lessons, for instance, are opportunities for children to be engaged in activities that benefit others (e.g., Battistich et al., 1997; Staub, 1988). Given that ROE is a universal intervention targeted to fostering the social and emotional competence of all children, it follows then that such an intervention should assist in improving the classrooms' ecology by reducing aggressive behaviours among classmates (Greenberg et al., 2003).

Study Hypotheses

It was anticipated that students in the sample would differ in their aggression subtypes (Mayberry & Espelage, 2007). Specifically, it was hypothesized that four subgroups of student behaviour would emerge.; (1) those engaging in neither proactive or reactive aggression, (2) those engaging in primarily proactive aggression, (3) those engaging in primarily reactive aggression, and (4) those engaging in both proactive and reactive aggression.

Consistent with previous reports it was hypothesized that children with high teacher ratings of proactive and reactive aggression would be more likely rated as aggressive by their peers. Further, it was hypothesized that children would accurately rate their own proactive and reactive aggressive behaviours when compared to ratings made by peers and teachers (Cillesen & Bellmore, 1999).

As it is acknowledged that the ROE program is effective in reducing aggressive behaviour (Schonert-Reichl et al., 2002), it was hypothesized that proactively and reactively aggressive children who received the ROE program would decrease in their aggressive beahviours across the school year. Specifically, it was hypothesized that a classroom-wide social and emotional learning program in the school environment would alter the commenced trajectory of aggressive behaviour.

In summary, the following questions were be examined:

1. Do different clusters of student behaviour emerge when examining teacher reports of proactive and reactive aggression?
2. Are teacher reported subtypes of proactive and reactive aggressive children consistent with peer and self-report subtypes?
3. Does the ROE program have a differential effect on children who demonstrate different profiles of reactive and/or proactive aggression?

Method

Research Design

The participants in the study came from a larger study examining the effectiveness of the ROE program in Alberta, Canada. A quasi-experimental comparison group pre-posttest design was used to structure the current evaluation. Participating schools were chosen based on their willingness to participate in the study and their support of the ROE program. The schools reflect a rural or suburban community profile (i.e., outside the metropolitan areas of Edmonton and Calgary). Eight schools were approached in different locations of the province of

Alberta and five agreed to participate. Schools and classrooms that had the ROE program were selected based on the availability of a trained ROE instructor in the area and on the principal's support for implementing the program at the school. The comparison schools and classrooms were selected if they were located in a similar location with a similar school population. Comparison schools were promised the ROE program in the year following the evaluation. ROE program and comparison classrooms were matched as closely as possible with respect to class size, grade level, and school demographics.

Participants

In total there were 30 classrooms in the study, 14 classrooms had the ROE program across four schools and 16 were comparison classrooms across two schools. All classrooms were regular education classrooms. No known children with special needs were part of any participating classrooms. Active consent was required and obtained from 94% of the teachers in the participating schools (2 comparison classroom teachers declined and therefore their students were not approached to participate). Student participants were drawn from consenting classrooms in the 4th, 5th, and 6th grades in the five schools. As active consent was necessary for participation, parental permission forms, along with a letter from the school principal encouraging participation in the evaluation, were sent to all parents/guardians requesting their child's participation in the assessment phase of the evaluation. Only those children who received parental permission were included in this study, this involved 94% of the children in these classrooms. Student assent to participate was requested from all students with a 99% assent rate (100% at pretest and 99% at posttest).

The recruited student sample included 597 children attending school in the fall of 4th to 6th grades. Thirty-six children (6%) were lost either because they moved away prior to post-testing or were absent on the day(s) of data collection. One teacher did not return the post-test teacher ratings of child behaviour (n = 19 students), allowing for teacher ratings of child behaviour in only 29 of the 30 classrooms (13 ROE classrooms; 16 comparison classrooms). The final sample was comprised of 542 children (259 girls, 283 boys) in grades 4 to 6 who remained in their respective intervention (n = 259) or comparison (n = 283) classrooms throughout the one school-year intervention and were available for pre- and post testing. The data collection commenced in participating schools and classrooms in October 2006. The mean age of students at pretest was 10 years old. Students ranged from 7.1 years to 12.3 years and were in grades 4-6. One hundred and seventy one (29.8%) students were in grade 4, 168 (30.3%) students were in grade 5, and 203 (39.9%) students were in grade 6. For a breakdown of the number of students by group, class, and age see Table 1.

Implementation of the ROE Program

Babies and their parent(s) who participated in the ROE program were recruited by word of mouth from local communities. All nine ROE program themes (Meeting the Baby, Crying, Caring and Planning for the Baby, Emotions, Safety, Sleep, Communication, Who Am I? Goodbye and Good Wishes) were completed by the end of the school year (June 2006) across all of the 14 participating ROE program classrooms, each classroom had its own ROE instructor. The time for each classroom lesson ranged from 30 to 45 minutes. Each instructor utilized the ROE intermediate grade curriculum (i.e., grades 4, 5,

and 6) (Gordon, 2001) to implement the program. Each theme involved three lessons per month: (1) a pre-family visit which introduced the theme; (2) a class visit by the "classroom baby" and his/her parent(s)/caregiver(s), where the instructor directed interactions and observations with baby and parent(s) to the students to enhance learning about infant development, and; (3) a post-family visit where the students were guided to discuss the baby visit and conclude the theme.

Measures

Proactive and Reactive Aggression

Teacher Reports. Teachers rated children's social behavior, at pretest and posttest, using the Child Social Behavior Scale (CSBS; NLSCY, 2002). The CSBS was developed from questionnaires used in previous research examining proactive and reactive aggression (see Crick & Dodge, 1996; Dodge & Coie, 1987). The CSBS is a scale for teachers to rate individual children's social behavior with peers at school with scale points labeled 1 (*doesn't apply)* to 3 (*certainly applies*) implying higher scores indicate higher levels of aggression. Nine questions make up the proactive aggression scale (Crick & Dodge, 1996) and three questions make up the reactive aggression scale (Dodge & Coie, 1987). Previous research has provided supportive evidence for the construct validity of the CSBS (see Ladd & Profilet, 1996; Schonert-Reichl et al., 2002). Cronbach alphas across both proactive and reactive aggression scales ranged from 0.83 to 0.89 at both pretest and posttest. For an example of the teacher rating scale, please see Appendix A.

Peer and Self-Nominations. Peer nominations were used to obtain independent assessments of children's social behavior (Parkhurst & Asher, 1992).

Peer nominations were used to assess both proactive and reactive aggression. Students' nominations were standardized within each classroom to control for differences in class size; a proportion score was used to calculate the percentage of raters for each statement as it related to each student. For the proactive and reactive peer nomination statements, a smaller percentage of raters indicated that less peers felt the child was engaging in proactive or reactive aggression. During data collection, directions for the peer nominations cued students to read a statement (e.g., 'students who get angry easily and fight back when teased') and circle all names of the students from a class list that best fit with the statement. In addition, students rated if they felt that their own behaviours matched this statement. In total there were two reactive aggression statements and one proactive aggressive statement. Reactive aggression statements included: 'students who get angry easily and fight back when teased' and 'students who get mad at kids who hurt them by accident'; and the proactive aggression statement was: 'students who play mean tricks or make plants to hurt others.' For an example of the peer and self-rating scale, please see Appendix B.

Procedure

Student questionnaires were group administered to children in their classrooms by trained research assistants in sessions of approximately 45-60 minutes. All instructions questionnaires were read out loud to students to control for reading difficulties. The children were asked to provide assent to participate in the study as well as asked to provide their gender. Pretest data collection took place in the fall of the school year prior to or close to the start date of the ROE program, and posttest data collection occurred at the end of the school year

approximately ten months later in late May or early June after most or all of the ROE lessons had been completed. Students completed peer and self-nominations on constructs examining proactive and reactive aggression. Teachers completed questionnaires probing proactive and reactive aggression of students in their respective classroom.

Data Analytic Plan

Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) software, Version 16. Descriptive data were calculated for participant characteristics (i.e., age, gender, and grade) in both ROE program and comparison classrooms. Cluster analysis was used to group children into subgroups based on the pretest teacher ratings of proactive and reactive aggression. Cluster analysis is an investigative strategy used to classify data into meaningful groups (Hartigan, 1975; Rapkin & Luke, 1993). It was used for the present analysis to gain an understanding of the sample of children and distinguish between those who engaged in proactive aggression, those who engaged in reactive aggression, those who engaged in both proactive and reactive aggression and those who did not engage in either. Correlations between teacher, peer, and self-reports of proactive and reactive aggression controlling for gender and age were carried out to determine if there was consistency among these ratings. Change scores of teacher, peer, and self ratings were used to explore if the ROE program had a differential effect on clusters of children who demonstrated different profiles of reactive and/or proactive aggression, using a series of General Linear Model Analyses of Covariance (ANCOVAs) using gender and age as covariates. According to Zumbo (1999), if measures of change are used correctly

and if individual variance exists within data, change scores can be considered "unbiased estimates of true change" (p. 287).

Results

Preliminary Analyses

Experimental and Control Group Differences. A series of ANOVAs were performed to examine mean pretest differences between ROE program and comparison children on all measures to determine if these groups were comparable. There were no significant differences for self-ratings of reactive aggression, $F(1, 541)=.00$, $p=.99$ and proactive aggression, $F(1, 541)=.04$, $p=.85$, or peer ratings of reactive aggression, $F(1, 541)=.79$, $p=.37$ or proactive aggression, $F(1, 541)=.62$, $p=.43$. No significant differences were found for teacher ratings of reactive aggression, $F(1,541)=1.77$, $p=.18$, however significant differences were found for proactive aggression, $F(1, 541)=4.04$, $p=.05$. Thus in further analyses of teacher ratings, effects of the intervention pretest scores were co-varied for ratings of proactive aggression.

Gender Differences. To examine whether there were significant differences between groups by gender at pretest, a MANOVA was conducted with each of the pretest scores as dependent variables. The result of this analysis yielded a significant multivariate effect, Wilks' Lamda=.88, $F(6, 535) = 12.60$, $p < .001$, indicating gender needed to be controlled for in all subsequent analyses of the effect of the ROE program. The means showed that overall, males were rated higher in proactive and reactive aggression than the females (see Table 2).

Age Differences. To examine whether there were significant differences between groups by age at pretest, a MANOVA was conducted with each of the

pretest scores as dependent variables. The results of this analysis yielded a significant multivariate effect, Wilks' Lamda=.96, F (6, 535)=3.43, p=.002, indicating age needed to be controlled for in all subsequent analysis of the ROE program. Inspection of the between subjects effects revealed that teachers rated older students as being more proactively aggressive than younger students (i.e., grade 4 M=1.11, SD=.22; grade 5 M=1.17, SD=.34; grade 6 M=1.21, SD=.38).

Prior to group analysis, change scores of teacher, self, and peer reports of proactive and reactive aggression were examined to assess missing values and assumptions of normality of the sampling distributions were examined. Inspection of the data revealed that 51 of the posttest scores were incomplete due to students moving (n=32) or incomplete teacher reports (n=19). Because these values were not missing at random, these cases (n=51) were deleted from the final analysis; however, a MANOVA revealed that there were no significant difference between pretest scores of the missing cases and those that remained in the final analysis (n = 542). Sampling distributions of the measures were graphically inspected. Linearity and homogeneity of variance were acceptable for peer nominations and self-nominations. To improve pairwise linearity and to reduce the extreme skewness and kurtosis, teacher reports were logarithmically transformed.

Cluster Analysis

Pretest teacher CSBS (Crick & Dodge, 1996; Dodge & Coie, 1987) ratings of children's proactive and reactive aggression were used to group children into clusters. We first used Ward's algorithm to examine possible cluster solutions (Borgen & Barnett, 1987; Rapkin & Luke, 1993). Ward's algorithm reduces variance within clusters and is suggested to be a highly effective cluster-analytic

method (Borgen & Barnett, 1987). Nonetheless, Ward's cluster method has also been criticized for forcing outliers into a cluster that may not be statistically appropriate and for "not ensuring optimum homogeneity of the final cluster" (p. 478, Borgen & Barnett, 1987). Using Ward's Method, two, three, and four factor solutions were examined. Results of cluster analysis suggested that a three-cluster solution was most appropriate for the data. The hypothesized four-cluster solution was not deemed appropriate (Rapkin & Luke, 1993), as the fourth cluster was conceptually the same as one of the three clusters (i.e., proactive/reactive aggressive). Following Wards analysis, a *k*-means clustering specified a three cluster solution from the final cluster centres (Rapkin & Luke, 1993). The three factor solution consisted of the following groups: a) 'uninvolved' (n=390; 71.7%), low reactive aggression scores (M=1.05, SD=.12) and low proactive aggressive scores (M=1.04, SD=.11); b) 'reactive aggressive' (n=117; 21.6%), high score on reactive aggressive (M=1.91, SD=0.25) and low on proactive aggressive (M=1.31, SD=.27); and c) 'proactive/reactive aggressive' (n=35; 6.7%), high scores on proactive aggression (M=2.02, SD=.50) and reactive aggression (M=2.74, SD=.28).

Descriptive data for the three cluster profiles were compiled on the child, teacher, and peer ratings of reactive and proactive aggression for both ROE and comparison classrooms. A difference score for each dependent variable (post test – pre test = difference score) was calculated for each child within each cluster. Mean pretest, posttest, and difference scores are presented in Table 2 through Table 7.

Correlations

Partial correlations were used to examine if teachers, peers, and self-ratings of proactive and reactive aggression were associated. Age and gender were used as covariates to control for differences found in the preliminary analysis. All correlations were significant (see Table 8) indicating that teacher, peer, and self ratings of reactive and proactive student behaviour in the classroom were associated.

Analyses of the Effect of the Roots of Empathy

For each measure, teacher, self, and peer ratings of proactive and reactive aggression, a 2x3 ANCOVA was conducted (with 2 levels of group-ROE/comparison and 3 levels of clusters-uninvolved/reactive aggressive/proactive-reactive aggressive). Gender and age were used as covariates.

Teacher reports of reactive aggression. Results revealed no significant main effect was found for group F (1, 535)=1.53, p=.22; a significant main effect was found for cluster F (2, 535)=25.77, p=<.001 (partial eta squared=.09, indicating 9% of the variance could be explained by the cluster grouping); and no interaction effect was found F (2, 535)=1.86, p=.16.). Post hoc comparisons using the Bonferroni test indicated that the mean difference score for the uninvolved cluster (M=.13, SD=.36) was significantly different from the reactive cluster (M=-.12, SD=.61) and the proactive/reactive cluster (M=-.27, SD=.52). The reactive cluster and the proactive/reactive cluster did not differ significantly from each other.

Children in the reactive/proactive cluster demonstrated reductions in aggression over the school year. This finding indicates that teachers rated children differently depending on the cluster that they were in. Children in both the 'reactive aggressive' cluster as well as in the 'proactive/reactive aggressive' cluster became slightly less aggressive from pretest to posttest, in fact, the comparison group had a change twice that of the ROE group, though differences between the comparison group and the ROE program group were marginal and not significant (see Table 3).

Teacher reports of proactive aggression. Analyses of teacher ratings of proactive aggression found no significant main effect was for group F (1, 534)=0.12, p=.13; a significant main effect for cluster F (2, 534)=34.00, p<0.001 (partial eta squared=0.11 accounting for 11% of the variance explained by the cluster grouping); and no interaction effect F (2, 534)=1.15, p=.32. Post hoc comparisons using the Bonferroni test indicated that the mean difference score for the uninvolved cluster (M=.04, SD=.18) was significantly different from the reactive cluster (M=-.06, SD=.32) and the proactive/reactive cluster (M=-.30, SD=.52). The reactive cluster was also significantly different from the proactive/reactive cluster.

Examination of mean difference scores, indicate that children in both the 'reactive aggressive' cluster and the 'proactive/reactive aggressive' cluster were less proactively aggressive according to teacher ratings across the school year. Children in the uninvolved cluster did not change from pre to post. Furthermore,

participation in the ROE program did not have an effect on teacher ratings of proactive aggression (see Table 4).

Peer reports of proactive aggression. No significant main effect was found for group F (1, 535)=.48, p=.49; for cluster F (1, 535)=.58, p=.56; and no interaction effect was found F (1,535)=2.64, p=.07. Upon examination of the mean scores, children in all three clusters of both groups had a very small increase in their proactive aggression across the school year (see Table 6).

Peer reports of reactive aggression. No significant main effect was found for group F (1, 535)=.51, p=.48; significant main effects were found for cluster F (1,535)=5.36, p<.01; and no significant interaction effect was found F (2, 535)= 2.30, p=.10. Post hoc comparisons using the Bonferroni test indicated that the mean difference score for the uninvolved cluster (M=.04, SD=.11) was significantly different from the reactive aggressive cluster (M=.0002, SD=.13). The proactive/reactive cluster (M=.02, SD=.17) was not significantly different from either the uninvolved cluster or the reactive aggressive cluster.

Self reports of proactive aggression. Significant main effect for group was found F (1, 535)= 3.94, p<.05 (partial eta squared=.01, indicating only 1% of the variance can be explained); no significant effects were found for cluster F (1, 535)=.23, p=.79; and no interaction effect was found F (1,535)=1.48, p=.23. The ROE group (M=.06, SD=.30) rated themselves as engaging in higher levels of proactive aggression than the comparison group (M=.01, SD=.26) at the end of the school year. Interestingly, children in the ROE group that were in the 'proactive/reactive aggressive' cluster had higher self-report scores of proactive

aggression at pretest and at posttest suggesting this cohort of children may have been more aggressive at the start of the school year (see Table 8).

Self reports of reactive aggression. No significant main effect for group F (1, 535)= 2.49, p=.12; a significant effect for cluster F (1, 535)= 3.70, p<.05 (partial eta squared =.01, indicating again that only 1% of the variance can be explained); and no interaction effect F (1,535)=1.45, p=.24. Post hoc comparisons using the Bonferroni test indicated that the mean difference score proactive/reactive cluster (M= -.09, SD=.46) was significantly lower than the reactive aggressive cluster (M=.06, SD=.40). The uninvolved cluster (M= -.01, SD=.29) was not significantly different from either aggressive cluster.

Upon examination of mean scores, in the proactive/reactive aggressive cluster of comparison group of children, they report a decrease in reactive aggression. The opposite trend was found for children in the ROE group (see Table 7).

Discussion

Overview

The present research examined whether the ROE program was effective in reducing proactive and reactive aggression in children. Based on teacher ratings of proactive and reactive aggression, three clusters of children emerged: those engaging in neither reactive or proactive aggression, those engaging in primarily reactive aggression, and those engaging in high levels of both proactive and reactive aggression. Peer and self-ratings of aggression concurred with teacher ratings of children engaging in proactive and reactive aggression. The effects of the ROE program presented mixed findings. The ROE program did not have a

significant effect in reducing proactive and reactive aggression in children that were engaging high levels of such aggression though there was a non-significant decrease in aggression according to some raters.

Reactive and Proactive Aggression Subtypes

Results of the cluster analysis were slightly different than hypothesized as only three distinct subgroups of children emerged: uninvolved, high reactive aggressive and high reactive and proactive aggressive. In a study that utilized similar procedures (Mayberry & Espelage, 2007), four distinct clusters emerged: children who were not aggressive, children who were only reactively aggressive, children who were primarily proactively aggressive, and children who were both reactive and proactively aggressive. As anticipated, consistent with Mayberry and Espelage (2007) the largest cluster consisted of children who were 'uninvolved' or neither proactive nor reactive aggressive. Children engaging in primarily reactive aggression made up the second largest cluster ('reactive aggressive') and children engaging in both proactive and reactive aggression ('proactive/reactive aggressive') made up the smallest cluster. Unlike Mayberry and Espelage, no fourth cluster of children engaging in primarily proactive aggression emerged.

A possible explanation for the difference between the present findings and Mayberry and Espelage (2007) were differences in raters and measurement tools. Upon comparison of measures used in Mayberry and Espelage (2007), proactive and reactive aggression were defined in a similar manner to the present study implying the same constructs were measured. Mayberry and Espelage (2007) used self-reports of aggression to cluster children whereas the present study used teacher reports to cluster children. Results of past research using different raters to

examine the same construct (e.g., Little, Brauner, Jones, Nock, & Hawley, 2003) indicated the importance of cautiously interpreting results as reported by any one type of rater. Teacher ratings, peer ratings, and self-ratings all have inherent strengths and weaknesses. When compared to peers, teachers can be considered more experienced judges of children's behaviours. Due to their educational training, teachers could be considered better at distinguishing between different types of child behaviour than children themselves (Ladd & Profilet, 1996). Thus, the differences in findings regarding the clusters of proactive and reactive aggression could be attributed to differences in rater point of view. However, as discussed in the following section teacher, self, and peer ratings were associated with one another. Though it was not carried out in the current research, to further the findings in follow-up examinations of the data, it would be interesting to examine cluster solutions using peer and self-ratings of proactive and reactive aggression and compare the results to those found with teacher ratings.

Teacher, Self, and Peer Ratings of Proactive and Reactive Aggression

Upon examination of correlations between teacher reports, self, and peer-nominations teacher ratings of proactive and reactive aggression were significantly and moderately correlated (Glass & Hopkins, 1996; Pallant, 2006), with ratings of children by their peers. Further, correlations of self-ratings of proactive and reactive aggression were small to moderate in strength (Glass & Hopkins, 1996; Pallant, 2006) but were significantly correlated with teacher and peer ratings. These results were stronger than those found by Cillesen and Bellmore (1999), who found that correlations between self, peer, and teacher

ratings for the 644 grade four children were small in strength (range .14 to .19) yet mostly significant.

In the present study, smaller correlations between self-other ratings (e.g., self and peer; self and teacher) yielded only 5-14% of shared variance; whereas, 25-34% of the variance was explained by the correlations between teacher and peer ratings. This suggests that children engaging in proactive and reactive aggression have less insight into their behaviour than teachers and peers. Cillisen and Bellmore (1999) found that children with lower prosocial skills were less accurate in rating how their peers perceived them. Additionally, there is evidence to suggest that children with low prosocial abilities tend to engage in aggression more frequently than those with higher prosocial skills and have a decreased ability to understand how others perceive them (Eisenberg & Fabes, 1998). There is some indication that children who are less liked by others are often those children who are engaging in aggressive behaviours and tend to have a difficult time seeing how others perceive them (Cillisen & Bellmore, 1999). It is therefore, understandable that correlations between aggressive children's self-ratings and the ratings of others (e.g., self and teacher; self and peers) are smaller than correlations between the ratings of others (e.g., teachers and peers).

The Effect of the ROE Program

Overall effects of the ROE program yielded mixed results. Changes over time (i.e., pretest to posttest) were explored as were the effects of the ROE program on the 'proactive/reactive aggressive' cluster, the 'reactive aggressive' cluster, and the 'uninvolved' cluster. In general, the ROE program appears to have had a positive, yet not statistically significant, effect on those children not

engaging in aggressive behaviour at the start of the school year. Though the ROE program did not decrease ratings of aggression, the ratings of aggression for the uninvolved cluster of children in the ROE program group increased less than the ratings of aggression for children in the same cluster in the comparison group suggesting a positive effect, these changes were not statistically significant.

Findings indicating that 'proactive/reactive aggressive' children in the comparison group self-reported a decrease in both types of aggression across the school year could be attributed to pretest differences between children in the ROE program and comparison group. At pretest, children in the ROE program group and the 'proactive/reactive aggressive' cluster had higher self-report scores of proactive and reactive aggression than did the children in the comparison group.

Interestingly, children in the ROE program group self-reported small increases in proactive and reactive aggression (0 to .10), something seen in the comparison group as well except for the proactive/reactive group who reported decreased aggression. This anomalous finding could be attributed to skills taught in the ROE program. Though aggressive children who received the program may not have reduced their aggressive behaviours, it is possible that they became more aware of the proactive and reactive aggression that they were engaging in. Among others, lessons within the ROE program focus on teaching children emotional understanding and the nature and implication of bullying (Gordon, 2001; 2005). It may be that children, who received the ROE program, became more aware of aggressive behaviours related to bullying, often considered to be proactive aggression. In examining research by Mayberry and Espelage (2007), findings

suggest that aggressive and non-aggressive children do not differ on self-perceptions of their own behaviours. In the present research, the finding that children in the aggressive clusters who received the ROE program self-reported higher scores of proactive and reactive aggression at pretest and posttest than comparison children, points to the possibility that the ROE program had an effect in increasing their self-understanding of proactive and reactive aggressive behaviours. An increase in bullying awareness following a bullying intervention program has been reported by others (Olweus, 1993). Speculations about the ROE program teaching children about bullying-type aggression and thereby increasing ratings of aggression, has been considered by other ROE program researchers (see Schonert-Reichl et al., 2002). In the present investigation, for children already embarking on a trajectory of aggressive behaviour, the program may not have been enough to change their actions but according to the results, it appears to have caused an understanding of the behaviours that they were engaging in. This notion is supported by Frey et al. (2005), who found that a bullying intervention program had small effects on children's perceptions of bullying across the school year. Frey et al. speculate that a program that took place over a year, as the ROE program did in the present investigation, was too short of a time span for attitudes towards bullying behaviour to improve.

According to peers, children in all clusters of both the ROE and comparison groups mildly increased in their proactive aggression across the school year. In considering the course of aggressive behaviour across the school year, Tremblay (2000) has indicated that across the school year aggression tends

to increase. This was further supported by Grossman et al. (1997) who found that elementary school children, compared to their same age peers receiving a social competency promotion program, went up in their ratings of aggression across the school year.

The difference in teacher and peer ratings is curious and could be attributed to several factors. Children spend time together outside of the classroom and over the course of the school year, have more opportunities for observing each other such as on the playground (Frey et al., 2005). They may therefore have a better understanding of each other than teachers do. Further, as teachers typically set classroom boundaries, it is possible that over the course of the school year, children learn to abide by these rules and avoid negative interactions with each other in the presence of the teacher. It is likely that children learn to refrain from engaging in behaviours that teachers may reprimand (Frey et al., 2005).

Cluster Differences

Aggressive Clusters. The ROE program had no significant effect in reducing proactive and reactive aggression for children found in the two aggressive clusters (i.e., proactive/reactive aggressive and reactive aggressive) thus the null hypothesis was satisfied. Teacher ratings trends revealed a decrease in proactive and reactive aggression for the two aggressive clusters of children for both ROE and comparison groups.

Results suggest that the effect of the ROE program may be limited. According to Bandura (1999), human behaviour is highly complex and cannot be understood solely by environmental factors. Complete understanding requires a

detailed image of a child's unique human agency consisting of complex sociostructural and psychological factors. As the school environment affects each child, so does a child's socioeconomic conditions, family structure, and self-regulatory factors (Bandura, 1999). Though data gathered in the present investigation sheds some light on a facet of one environment present in the participants' lives, other relevant factors such as detailed familial circumstances or socioeconomic status were not acquired but may exert a stronger effect on maintaining aggressive behaviours. Other studies suggest strong predictive relationships between familial and social environments and later aggressive behaviour. For example, Pepler et al., (2008) found that elementary school students who experience problems in relationships with their parents and their peers are more likely to fall onto a trajectory of aggressive behaviour. As well, findings from a recent study exploring predictive mechanisms of aggressive behaviour (Joussemet et al., 2008) implied that parental separation or divorce, young mothers, and a controlling parental style were predictive of children engaging in physical aggression. Finally, teachers and peers are only two of several possible raters that could contribute to information about the participants. In research conducted by Little et al. (2003), 'friends' and 'best friends' were distinguished among peer raters. As these and other complex factors are beyond the scope of the present study, alternative explanations regarding the trajectories of aggression that students in the two aggressive clusters were a part of are not possible.

Uninvolved Cluster. Consistent with previous research exploring the ROE program, (e.g., Schonert-Reichl et al., 2002; Smith, Schonert-Reichl, Jelen, Hertzman, 2008), the ROE program had some positive effect on children in the 'uninvolved' cluster, though not statistically significant. Peer ratings imply that children who received the ROE program and in the 'uninvolved' cluster increased less in their reactive aggression compared to those in the comparison group in the same cluster. No significant differences were detected between ROE program and comparison groups for the 'uninvolved' cluster; however, though differences in teacher ratings proactive aggression for the 'uninvolved' cluster were non-significant, trends in the data suggest a smaller increase in proactive aggression for children in the ROE group as opposed to those in the comparison group.

As previous research has found, this trend is in a positive direction and support the effectiveness of the ROE program acting as a prevention program in reducing proactive aggression across the school year. Overall, compared to comparison children, those in the ROE program were reported to have less of an increase in proactive aggression and a larger decrease in reactive aggression. This finding implies that the ROE program acts as an effective prevention program for children who are not engaging in high levels of aggressive behaviours at the start of the school year.

Limitations

There are limitations that should be noted. First, the use of a quasi-experimental design is not ideal in assessing the effect of a program such as the ROE; classrooms were not randomly assigned to receive the ROE program or to act as comparison classrooms. Instead, teachers and principals volunteered to

have the program implemented in their classroom and school. For this reason, it is not possible to make definite conclusions between the ROE program and children's understanding of proactive and reactive aggression. The observed effects may be due to components of the ROE curriculum, characteristics of the ROE instructor, beliefs about the program by the classroom teacher, school-wide support of the ROE program, or some combination these.

A second limitation of the current research is that teachers, children, and schools were not blind to the experimental status of children in the ROE and comparison groups. Furthermore, peer nominations were not structured to assess friendship status of raters and no reports on levels of proactive and reactive aggression were gathered from the home environment. Future investigations of the effect of the ROE program on children engaging in proactive and reactive aggression would benefit from collecting data from multiple informants in multiple environments including, friends and best friends, and parents or others from the home environments in order to allow for a more rounded interpretation of children's proactive and reactive aggressive behaviors. Furthermore, for a detailed understanding of the trajectory of aggressive behaviours, detailed information on family history, and socioeconomic status would provide a clearer picture of the influences that the home environment has on children engaging in proactive and reactive aggression.

Finally, as the curriculum of the ROE program is versatile and contains many lessons, it is not possible to know exactly which aspects of the program are responsible for changes in ratings of proactive and reactive aggression.

Furthermore, as the study occurred across only one year, it is difficult to conclude that the ROE program was the only influence affecting ratings of child proactive and reactive aggression. Research suggests that social and emotional learning programs with the highest efficacy are those that are ongoing and begin in early school years and continue on through high school (Greenberg et al., 2003). Though prevention of aggressive behaviours is often cited as a positive impact of social and emotional learning programs (Zins & Elias, 2006) such as the ROE program (Gordon, 2005), based on the present data, it is not possible to conclude that one year of the ROE program reduced proactive and reactive aggression in children across the school year.

Conclusions

Overall results do not provide evidence that the ROE is effective changing proactive and reactive aggressive behaviours of children engaging in high levels of both types of aggression. One could speculate that proactively and reactively aggressive children may become more aware of the behaviours they are engaging in upon receiving the ROE program, experiencing the program did not to reduce the proactive and reactive behaviours of these children according to peer, self, and teacher ratings.

As found in previous research (Schonert-Reichl et al., 2002; Smith et al., 2008), the ROE program appears to have a positive effect in slowing expected increases of proactive and reactive aggression across the school year for children who are not engaging in high levels of either type of aggression at the start of the school year (e.g., the 'uninvolved' cluster). This study adds to research evidence (Schonert-Reichl et al., 2002; Smith et al., 2008) implying that the ROE program

acts as a prevention program and is successful in promoting children's understanding of proactive and reactive aggression and in reducing levels of aggression in children who are not categorized as highly aggressive at the start of the school year.

Aggressive behaviour has become a regular occurrence in many classrooms today (Pepler et al., 2006; Smith et al., 2004). Evidence suggests that the early use of aggression predicts later maladaptive behaviours into adulthood such as criminal behaviour and bullying into adulthood (Parker & Asher, 1987; Pepler et. al., 2006). Exploring possible solutions to decrease or eliminate such problematic behaviours in childhood should be a priority within classroom environments to prevent related challenges into adulthood. Social and emotional learning programs are one of several ways that school personnel strive to increase prosocial behaviour and decrease aggressive behaviour within the classroom (Elias, 2006; Greenberg et al., 2003). Finding successful evidence-based social and emotional learning programs, can help our schools become positive learning environments by increasing prosocial behaviour and decreasing aggression in and out of the classroom.

Tables

Table 1. Descriptive statistics for ROE and comparison classrooms and students

	Total	ROE	Comparison
Number of Classrooms	29	13	16
Grade 4	171	98	73
Grade 5	168	90	78
Grade 6	203	71	132
Girls	259	117	142
Boys	283	142	141
Mean age (in years)		10.22 (.93)	10.58 (.91)
Age Range (in years)		8.1-12.3	7.1-12.7
Total N	542	259	283

Note. Numbers in parentheses are standard deviations.

Table 2. Pretest scores for girls and boys

	Boys	Girls
Teacher reports of proactive aggression	1.203(0.20)	1.125(.02)
Teacher reports of reactive aggression	1.435(.03)	1.232(.03)
Peer reports of proactive aggression	.149(.008)	.069(.009)
Peer reports of reactive aggression	.216(.01)	.095(.01)
Self reports of proactive aggression	.053(.01)	.023(.01)
Self reports of reactive aggression	.216(.01)	.127(.02)

Note. Numbers in parentheses are standard errors.

Table 3. *Teacher Child Social Behaviour Scales Reactive Aggression Ratings: Adjusted Means at Pretest and Posttest for ROE Program and Comparison Groups, and Adjusted Difference Scores, with Gender and Age as Covariate.*

	ROE Program Group (n=256)			Comparison Group (n=286)		
	Pretest	Posttest	Difference Score	Pretest	Posttest	Difference Score
Uninvolved Cluster	1.06	1.15	.20	1.04	1.20	.16
n^a= 178	(.01)	(.03)	(.03)	(.01)	(.03)	(.03)
n^b= 213						
Reactive Aggressive Cluster	1.89	1.77	-.12	1.92	1.76	-.16
n^a= 59	(.02)	(.06)	(.06)	(.02)	(.06)	(.06)
n^b= 57						
Proactive/Reactive Aggressive	2.73	2.56	-.17	2.71	2.32	-.39
Cluster	(.04)	(.10)	(.10)	(.04)	(.11)	(.11)
n^a= 19						
n^b= 16						

Note. Numbers in parentheses are standard errors.
*$p < .05$
n^a= ROE
n^b=comparison

Table 4. *Teacher Child Social Behaviour Scales Proactive Aggression Ratings: Adjusted Means at Pretest and Posttest for ROE Program and Comparison Groups, and Adjusted Difference Scores, with Gender and Age as Covariate.*

	ROE Program Group (n=256)			Comparison Group (n=286)		
	Pretest	Posttest	Difference Score	Pretest	Posttest	Difference Score
Uninvolved Cluster	1.06	1.07	.01	1.02	1.10	.07
n^a= 178	(.015)	(.018)	(.02)	(.013)	(.02)	(.02)
n^b= 213						
Reactive Aggressive Cluster	1.32	1.25	-.07	1.32	1.24	-.08
n^a= 59	(.03)	(.03)	(.03)	(.03)	(.03)	(.03)
n^b= 57						
Proactive/Reactive Aggressive	2.17	1.87	-.29	1.92	1.60	-.32
Cluster	(.05)	(.06)	(.06)	(.05)	(.06)	(.06)
n^a= 19						
n^b= 16						

Note. Numbers in parentheses are standard errors.

*$p < .05$

n^a= ROE

n^b= comparison

Table 5. *Peer Nomination Reactive Aggression Ratings: Adjusted Means at Pretest and Posttest for ROE Program and Comparison Groups, and Adjusted Difference Scores, with Gender and Age as Covariate.*

	ROE Program Group (n=256)			Comparison Group (n=286)		
	Pretest	Posttest	Difference Score	Pretest	Posttest	Difference Score
Uninvolved Cluster	.11	.13	.02	.11	.16	.05
n^a= 178	(01)	(.01)	(.01)	(.01)	(.01)	(.01)
n^b= 213						
Reactive Aggressive Cluster	.21	.21	.00	.27	.26	-.01
n^a= 59	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
n^b= 57						
Proactive/Reactive Aggressive	.48	.53	.05	.36	.35	.01
Cluster	(.03)	(.04)	(.03)	(.04)	(.04)	(.03)
n^a= 19						
n^b= 16						

Note. Numbers in parentheses are standard errors.

*$p < .05$

n^a= ROE

n^b= comparison

Table 6. *Peer Nomination Proactive Aggression Ratings: Adjusted Means at Pretest and Posttest for ROE Program and Comparison Groups, and Adjusted Difference Scores, with Gender and Age as Covariate.*

	ROE Program Group (n=256)			Comparison Group (n=286)		
	Pretest	Posttest	Difference Score	Pretest	Posttest	Difference Score
Uninvolved Cluster	.08	.10	.03	.07	.11	.04
n^a= 178	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
n^b= 213						
Reactive Aggressive Cluster	.16	.21	.04	.19	.19	.00
n^a= 59	(.02)	(.02)	(.01)	(.02)	(.02)	(.02)
n^b= 57						
Proactive/Reactive Aggressive	.34	.40	.06	.21	.26	.05
Cluster	(.03)	(.03)	(.03)	(.03)	(.04)	(.03)
n^a= 19						
n^b= 16						

Note. Numbers in parentheses are standard errors.
$^*p < .05$
n^a= ROE
n^b= comparison

Table 7. *Self-Nomination Reactive Aggression Ratings: Adjusted Means at Pretest and Posttest for ROE Program and Comparison Groups, and Adjusted Difference Scores, with Gender and Age as Covariate.*

	ROE Program Group (n=256)			Comparison Group (n=286)		
	Pretest	Posttest	Difference Score	Pretest	Posttest	Difference Score
Uninvolved Cluster	.13	.13	.00	.14	.14	.00
n^a= 178	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
n^b= 213						
Reactive Aggressive Cluster	.18	.23	.05	.23	.27	.04
n^a= 59	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)
n^b= 57						
Proactive/Reactive Aggressive	.47	.47	.00	.33	.13	-.20
Cluster	(.07)	(.07)	(.08)	(.08)	(.08)	(.09)
n^a= 19						
n^b= 16						

Note. Numbers in parentheses are standard errors.
*$p < .05$
n^a= ROE
n^b= comparison

Table 8. *Self-Nomination Proactive Aggression Ratings: Adjusted Means at Pretest and Posttest for ROE Program and Comparison Groups, and Adjusted Difference Scores, with Gender and Age as Covariate.*

	ROE Program Group (n=256)			Comparison Group (n=286)		
	Pretest	Posttest	Difference Score	Pretest	Posttest	Difference Score
Uninvolved Cluster	.01	.04	.03	.03	.03	-.00
n^a= 178	(.01)	(.02)	(.02)	(.01)	(.02)	(.02)
n^b= 213						
Reactive Aggressive Cluster	.06	.10	.05	.07	.12	.05
n^a= 59	(.02)	(.03)	(.03)	(.03)	(.03)	(.04)
n^b= 57						
Proactive/Reactive Aggressive	.19	.29	.10	.07	.00	-.07
Cluster	(.04)	(.06)	(.06)	(.05)	(.07)	(.07)
n^a= 19						
n^b= 16						

Note. Numbers in parentheses are standard errors.
*$p < .05$
n^a= ROE
n^b= comparison

Table 9. *Correlations between teacher reports, peer and self-nominations at pretest for proactive and reactive aggression*

Subscale	Peer proactive	Self proactive	Teacher proactive	Peer reactive	Self reactive	Teacher reactive
Teacher proactive	.50*					
Peer proactive		.26*				
Self Proactive			.27*			
Teacher reactive				.57*		
Peer reactive					.37*	
Self reactive						.24*

*p<0.05
N=542

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Appendix A: Child Social Behaviour Scale

Student's Name or ID#: **Date: XXXXXX** **Time: X**

Please consider the descriptions contained in each of the following items below and rate the extent to which each of these descriptions applies to **this child**, particularly in the context of his/her behaviour with peers. Using the answers "**never or not true**," "**sometimes or somewhat true**" and "**often or very true**," how often would you say that **this child . . .** (Mark the circle corresponding to your answer, mark only one response per item.)

	Never or Not true	Sometimes or Somewhat true	Often or Very true
1. Shows sympathy to someone who has made a mistake.	○	○	○
2. Will try to help someone who has been hurt.	○	○	○
3. Gets into many fights.	○	○	○
4. **Threatens or bullies other children to get his/her own way.	○	○	○
5. Volunteers to help someone clear up a mess that someone else has made.	○	○	○
6. When mad at someone, tries to get others to dislike that person.	○	○	○
7. Destroys things belonging to his/her family, or other children.	○	○	○
8. *When teased or threatened, he/ she gets angry easily and strikes back.	○	○	○
9. If there is a quarrel or a dispute, will try to stop it.	○	○	○
10. When mad at someone, becomes friends with another as revenge.	○	○	○
11. Offers to help other children (friend, brother or sister) who are having difficulty with a task.	○	○	○
12. *Claims that other children are to blame in fight and feels like they started the trouble.	○	○	○
13. *When another child accidentally hurts him/her (such as by bumping into him/her), assumes that the other child meant to do it, and reacts with anger and fighting	○	○	○
14. When mad at someone, says bad things behind the other's back.	○	○	○
15. Comforts a child (friend, brother or sister) who is crying or upset.	○	○	○
16. **Plays mean tricks.	○	○	○
17. Threatens people.	○	○	○
18. Spontaneously helps to pick up objects which another child has dropped (e.g., pencil, book).	○	○	○
19. Is cruel, bullies, or is mean to others.	○	○	○
20. **Uses physical force, or threatens to use force, to dominate other children.	○	○	○
21. When mad at someone, says to others, "Let's not be with him/her."	○	○	○

22. Kicks, bites, hits other children.	O	O	O
23. **Plans aggressive acts.	O	O	O
24. Helps other children (friend, brother or sister) who are feeling sick.	O	O	O
25. Will invite bystanders to join in a game.	O	O	O
26. **Careful to protect self when aggressive.	O	O	O
27. **Gets other children to gang up on a peer that he/she does not like.	O	O	O
28. When mad at someone, tells the other one's secrets to a third person.	O	O	O
29. **Picks on smaller kids.	O	O	O
30. **Has hurt others to win a game.	O	O	O
31. **Hides aggressive acts.	O	O	O
32. Takes the opportunity to praise the work of less able children.	O	O	O
33. **Can control own behaviour when aggressive.	O	O	O

**indicates reactive aggression*
*** indicates proactive aggression*

Appendix B: Peer and Self Nominations

Peer and Self Assessment of Social Behaviour

DIRECTIONS:

On the following pages, is a list of your classmates. We would like to get some information about your feelings about them and their behaviours. Please follow the directions carefully.

YOU MAY CIRCLE YOUR OWN NAME if you believe the description applies to you.

In each of these long boxes, circle the names of: *(Do one box at a time.)*

1) Students who share and cooperate.	2) Students who start fights.	3) Students who help other kids when they have a problem.	4) Students who break the rules and do things they're not supposed to do.
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**indicates reactive aggression*

*** indicates proactive aggression*

In each of these long boxes, circle the names of: *(Do one box at a time.)*

5) Students who you can trust.	6) Students who talk behind other people's backs.	7) Students who when mad at someone say, "Let's not be his/her friend."	8) Students who include other kids in their group when they are playing.
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**indicates reactive aggression*
*** indicates proactive aggression*

In each of these long boxes, circle the names of: *(Do one box at a time.)*

9) *Students who get angry easily and fight back when teased.	10) Students who you would like to be in school activities with.	11) **Students who play mean tricks or make plans to hurt others.	12) *Students who get mad at kids who hurt them by accident.
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**indicates reactive aggression*
*** indicates proactive aggression*